King County
Department of Natural Resources and Parks
Wastewater Treatment Division

City of Carnation

Carnation Wastewater Treatment Facilities

Where will the treated water go?
A fact sheet on discharge alternatives

The Carnation Wastewater Treatment Plant will treat the City of Carnation's wastewater to such a high level that it will be safe to use for irrigation and other non-potable (not-for-drinking) water uses. Our job is to find the best use for this water resource. To discharge into the Snoqualmie River or on to the ground for recharging groundwater, the state requires that the effluent meet stringent water quality standards. The plant will meet these standards by providing advanced treatment (also called tertiary treatment). With this amount of treatment, the water can be used as reclaimed water for irrigating farms and parks, or it can be used to enhance a wetland to provide fish and wildlife habitat. Initially, the treatment plant is expected to treat about 250,000 gallons per day. Based on the City's most recent population projections, flows up to about 450,000 gallons are expected by 2027.

This fact sheet focuses on the discharge alternatives being considered for the Carnation Wastewater Treatment Plant. The alternatives being studied in depth as part of the draft environmental impact statement (EIS) include the following:

- River discharge through an outfall to the Snoqualmie River
- Wetland discharge to enhance an existing wetland
- Upland discharge (also called groundwater infiltration).

The project team is also looking at opportunities to use the effluent as reclaimed water for irrigation during summer months. The results of these studies will be included in the draft EIS that will be available for public review in spring 2004.

The plant will use advanced treatment to meet the high water quality standards required to discharge into a wetland, groundwater or the Snoqualmie River. The facility will get a National Pollutant Discharge Elimination System permit, which contains strict limits on what can be discharged. The limits are set so the receiving water is not degraded from its current condition and maintains any beneficial uses it now provides. Ongoing monitoring and reporting is required to make sure permit terms are met.

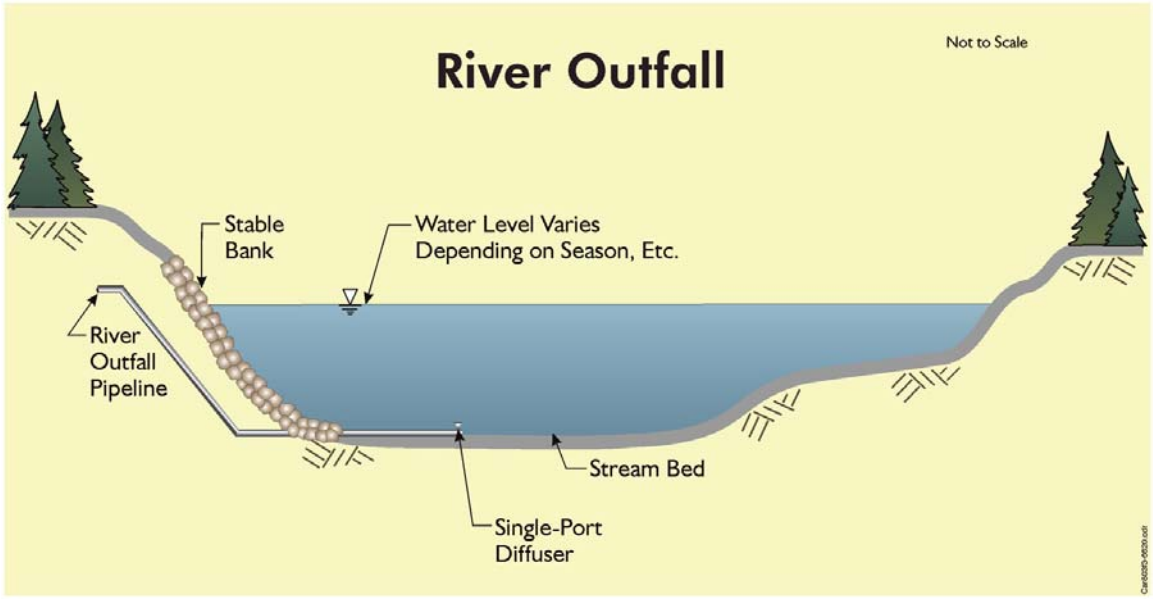
All the effluent, regardless of the discharge alternative chosen, will meet or exceed Class A reclaimed-water standards of Washington state. That standard means the reclaimed water has nearly unrestricted uses, including human contact, but is not considered safe for drinking.

Following is an overview of the river discharge, wetlands enhancement and upland discharge alternatives.

River discharge

A river outfall discharges the highly treated effluent to the river through a subsurface diffuser--a pipe with one or more holes below the water surface. An eight-inch diameter pipe will extend a short distance into the river. Effluent quality would have to meet or exceed stringent water quality standards and federal Endangered Species Act requirements, and protect beneficial uses such as recreation and wildlife. Discharge to the Snoqualmie River may be the most cost-effective alternative for the Carnation facility.

A river outfall must be placed in an area with a historically stable channel. The river bottom cannot have shifting gravel beds that could cover or damage the diffuser. The river must have acceptable depth and speed to dilute the effluent. King County evaluated locations in and near Carnation and identified three potential outfall locations that met the criteria. Of these three, the location at the bridge at Northeast Carnation Farm Road has been proposed as the river outfall location to be evaluated in the EIS.



To help make the decision about a river outfall, King County began a yearlong study in February 2003 of the water quality at various points along the river. Quarterly samples are being taken. Preliminary results are now available.

In coordination with the state Department of Ecology, water quality modeling is under way to determine necessary levels of treatment to meet critical water quality standards in the Snoqualmie River. This modeling will give baseline information and enable experts to evaluate the concentration and distribution of potential contaminants of concern.

In addition, several reports on habitat conditions for salmon and other aquatic wildlife have been completed by the University of Washington, the Tulalip Tribe and King County. A comprehensive habitat inventory is under way to evaluate habitat condition and potential opportunities for habitat protection and restoration actions. The Carnation wastewater treatment facility team is staying in touch with these efforts in case our

discharge can help provide further habitat opportunities such as the enhanced wetland alternative discussed below.

Summary

An outfall to a river or other body of water is a proven method of wastewater discharge. If this alternative is selected for Carnation, it will follow treatment to standards that eliminate adverse impacts to public health and the environment. King County would monitor the effluent daily to ensure it always meets high water quality standards.

Habitat enhancement through wetland discharge

Another discharge alternative is to pipe the water to enhance an existing wetland for environmental benefits. The state Department of Fish and Wildlife's Stillwater Wildlife Area is located just north of Carnation. The southern boundary of the refuge is next to Chinook Bend on the Snoqualmie River. The treated water could be piped to enhance this existing wetland and provide habitat and cool-water refuge for salmon in Harris Creek. The area is now managed for wildlife habitat, particularly for waterfowl. Enhancing a wetland in this area would be consistent with improving habitat for birds and waterfowl.

This is being done in several West Coast municipalities:

- Arcata, Calif., has a 2.3 million-gallon-per-day (mgd) wastewater treatment plant with 7.5 acres of treatment wetlands and 31 acres of treatment/enhancement wetlands. It has become a popular bird-watching spot and is a valued park in the community.
- Cannon Beach, Ore., is a coastal community of 1,300 that has treated its wastewater using aerated lagoons and a 15-acre modified natural treatment wetland since 1984.
- Hillsborough, Ore., has discharged secondary effluent from a 2-mgd plant into a constructed wetland since 1989.

Summary

Discharge to create or enhance a wetland is done successfully in many communities and can create a real amenity. If this alternative is selected for Carnation, it will follow treatment to standards that eliminate adverse impacts to public health and the environment. The effluent would be monitored daily to ensure it always meets high water quality standards.

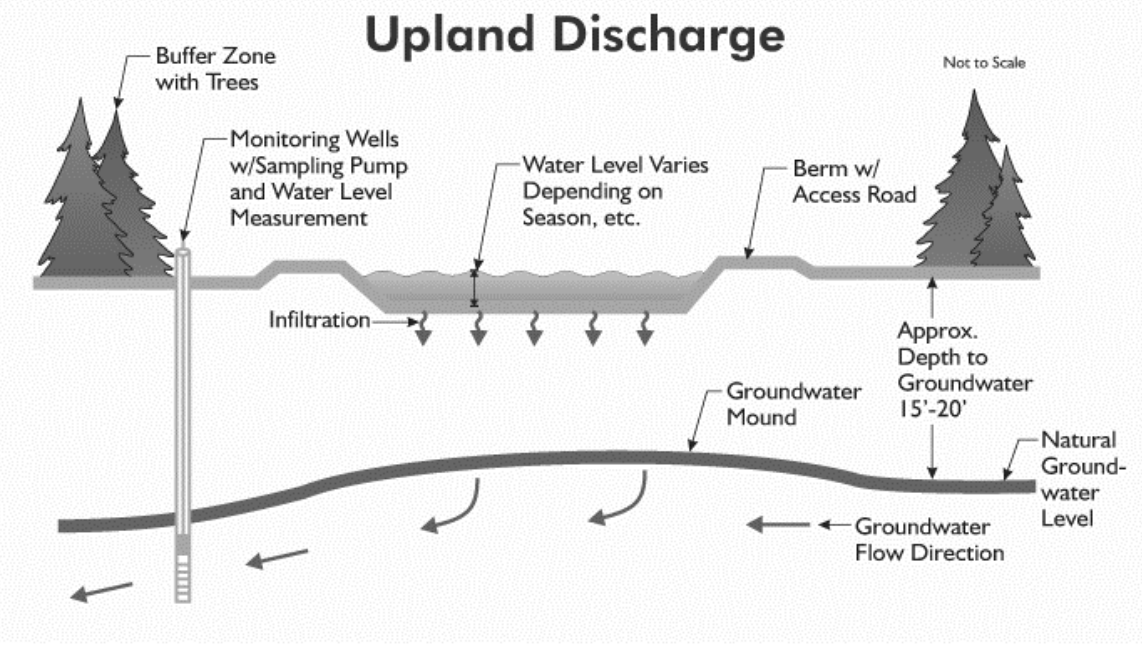
Upland discharge

Upland discharge, also called groundwater infiltration, involves discharging highly treated effluent onto the ground within bermed ponds or basins. Water percolates through the bottom of the infiltration basins, eventually recharging the groundwater. Water for recharging groundwater would be treated to meet stringent water quality standards.

Below are several examples of several projects in Washington state using upland discharge. These three plants were built as demonstration projects as part of the state Department of Ecology's overall reclaimed water demonstration project. Like the proposed Carnation wastewater treatment plant, these projects produce highly treated water that meets reclaimed water standards.

- Ephrata has a 1.12-mgd Class A reclaimed-water facility where the treated water is discharged to groundwater through four infiltration basins.
- Yelm has a 1.0-mgd Class A reclaimed-water facility where the effluent is discharged to Cochran Memorial Park for groundwater recharge.
- Royal City has a 0.25-mgd Class A reclaimed-water facility where effluent is used for site irrigation and groundwater recharge through three infiltration basins.

The proposed study area for upland discharge is southeast of Carnation in unincorporated King County. The study area includes five parcels south and east of the closed Carnation landfill near Northeast 24th Street. Key issues for suitable upland discharge sites are areas with suitable soils that allow the water to seep into the ground at suitable rates and an ability to meet the anti-degradation policy for groundwater. Preliminary studies show that any of the five parcels may be a suitable discharge site. Approximately 10 acres are needed for the upland discharge alternative.



Summary

A 1984 publication produced by the U.S. Environmental Protection Agency said 320 facilities in the United States use upland infiltration of treated wastewater. Today that number is much greater. In today's more carefully regulated environment, wastewater is treated to a very high standard, meeting requirements for drinking water. Upland disposal is a proven method of wastewater discharge that, if selected for Carnation, would follow treatment to the highest standards to eliminate adverse impacts to public health and the environment. As with river discharge, King County would monitor the effluent daily to ensure it meets high water quality standards.

Beneficial reuse

In the summer, some treated wastewater could be used for irrigation. Reclaimed water is treated to such a high level that it can be used safely for non-drinking water purposes like irrigation. Reclaimed water would be used within the treatment plant for internal plant processes. Potential reclaimed water uses, such as irrigation of local farmland and parks in the area, are being evaluated. An example of this combination can be found close by. The City of Snoqualmie operates a wastewater reclamation and reuse facility that produces effluent for irrigation during the summer and discharges to the Snoqualmie River during the winter.

Where can I get more information or let you know my opinion?

The EIS scoping period for this project ended on Sept. 12, 2003. Comments submitted during this period are being addressed in the Carnation Wastewater Treatment Facility Draft Environmental Impact Statement which is due to be released for public comment in early 2004.

The City of Carnation and King County's Wastewater Treatment Division are working together to provide public information and involvement opportunities throughout the siting and development process for the wastewater treatment system. Several community meetings will be held this fall and winter.

To give us your opinion, or to get further information on the treatment facility, contact the King County Carnation Wastewater Treatment Plant Project Information Line at 206-263-5212 or toll-free at 1-800-325-6165, ext. 35212; e-mail CarnationWWTP@metrokc.gov; or check the Web site at http://dnr.metrokc.gov/WTD/carnation/.

For information on the sewage collection system, call Bill Brandon, City Manager, for the City of Carnation, at 425-333-4192 or check Carnation's Web site at www.ci.carnation.wa.us.

To get this information in alternative formats, call 206-296-8361 or 711 (TTY)